

REMARKS

Summary of the Office Action

In the Office Action, claims 1, 3-9, and 11-16 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention. Claims 1, 3-6, and 8 were rejected under 35 U.S.C. § 102(e) as being anticipated by *Yamaji et al.* (U.S. Patent No. 5,721,601). Claims 7, 9, and 11 were rejected under 35 U.S.C. § 103(a) as being obvious over *Yamaji et al.* The Examiner made the Restriction Requirement/Election of Group I provisional. Applicant respectfully traverses these rejections for at least the following reasons.

Summary of the Response to the Office Action

Applicant amends claims 1, 3-9, and 15. Claims 1, 3-9, and 11-17, and 20-22 are pending in this application.

Response to Restriction Requirement

Applicant hereby elects Group I (claims 1, 3-9, and 11-16) in response to the Restriction Requirement.

In the Specification

The specification has been amended to include description of Figs. 3 and 4. This same change to the specification was made in this application's parent application as requested by the Office. Figs. 3 and 4 show the protective layers 18a and 18b composed of a plurality of layers (*e.g.*, 19a and 19b) which may be organic layers, inorganic layers, or both. Support for this feature can be found at least at page 9, lines 13-19 of Applicant's original specification.

All Subject Matter Complies With 35 U.S.C. § 112

Claims 1, 3-9, and 11-16 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Applicant respectfully submits that the alleged indefiniteness of the word “thin” is mooted by its removal from claims 1 and 3-8.

Applicant respectfully submits that the phrase “formed on an outer surface” as recited in independent claims 1 and 9, is well understood by one of ordinary skill in the art and is adequately supported in the specification at least at page 8, lines 11-19 and as shown in Figs. 2-4. The protective layers 18a and 18b are formed on the outer surface of the first substrate 10a and second substrate 10b, respectively. The alleged indefiniteness of the phrase is therefore respectfully traversed.

Applicant respectfully submits that the term “protective” as recited in independent claims 1 and 9, is well understood by one of ordinary skill in the art and is adequately supported in the specification at least at page 7, lines 1-18. Among other qualities, the protective layers 18a and 18b can protect at least against bubble development and the lodging of impurities into cracks in the substrates, that can decrease the optical quality of LCD. The protective layers 18a and 18b also strengthen the substrates for mechanical impulse. The alleged indefiniteness of the term is therefore respectfully traversed.

Applicant respectfully submits that the feature “inorganic layer has a compressive stress” as recited in claims 4 and 12, is well understood by one of ordinary skill in the art and is adequately supported in the specification at least at page 6, lines 19-22. The alleged indefiniteness of the feature is therefore respectfully traversed.

With regard to the “viscosity coefficient” feature, Applicant has amended claims 7 and 15 to better describe the range of values for the viscosity coefficient. It is respectfully submitted that a viscosity coefficient in the claimed range is well understood by those of ordinary skill in the art and is adequately supported in the specification at least at page 6, lines 19-22. In particular, with regard to claim 15, the phrase “several ten” is used in a manner similar to the conventionally known phrase “several hundred.” It is respectfully submitted that this claim language is understandable by one skilled in the art, and definite in accordance with the requirements of 35 U.S.C. § 112, second paragraph.

Accordingly, it is respectfully requested that the rejections under 35 U.S.C. § 112, second paragraph, be withdrawn.

The Claims Define Allowable Subject Matter

Claims 1, 3-6, and 8 were rejected under 35 U.S.C. § 102(e) as being anticipated by *Yamaji et al.* Applicant respectfully traverses this rejection for the following reasons.

Yamaji et al. discloses a LCD device that has improved image quality because its “planarizing film provides a substantially flat surface over the first substrate to minimize a height of a step present between an area corresponding to each pixel driving element and an area locating adjacent to the pixel driving element on the first substrate.” See column 4, lines 36-50 and the Abstract of *Yamaji et al.* In *Yamaji et al.*, an intermediate insulation layer 15, a first insulation layer 20, a planarization layer 32, a second insulation layer 31, a display electrode 4, a liquid crystal layer 3, and a common electrode 5, are all located between two silicon glass substrates 1 and 2.

However, *Yamaji et al.* does not disclose, teach, or suggest at least the feature of having “at least one transparent protective layer formed on an outer surface of the first

substrate and the second substrate” as recited in independent claims 1 and 9. In fact, *Yamaji et al.* does not disclose, teach, or suggest any layer or “protective layer” formed on the “outer surface” of its glass substrates. All of the *Yamaji et al.* layers are located between its two silicon glass substrates 1 and 2. Further, none of the *Yamaji et al.* layers are designed to protect a glass substrate from various problems, including mechanical impulse or transmission of cracks in a glass substrate. Because *Yamaji et al.* does not disclose, teach, or suggest at least these features, it cannot anticipate Applicant’s claimed invention.

As pointed out in MPEP § 2131, a claim is anticipated by a prior art reference only if each and every element as set forth in the claim is found. *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051 (Fed. Cir. 1987). Therefore, Applicant respectfully submits that the rejection under 35 U.S.C. § 102(e) should be withdrawn because *Yamaji et al.* does not disclose, teach, or suggest each feature of independent claims 1 and 9. Additionally, it is further respectfully submitted that dependent claims 3-8 and 11-16 are also allowable insofar as they recite the patentable combinations of features recited in independent claims 1 and 9, as well as reciting additional features that further distinguish over the applied art.

Claims 7, 9, and 11-16 were rejected under 35 U.S.C. § 103(a) as being obvious over *Yamaji et al.* Applicant respectfully traverses the rejections for the following reasons.

Applicant respectfully submits that the Office Action has not established a *prima facie* case of obviousness and therefore all rejections under 35 U.S.C. § 103(a) should be withdrawn. To establish a *prima facie* case of obviousness, three basic criteria must be met (see MPEP §§ 2142-2143). First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill the art,

to combine reference teachings. Second, there must be a reasonable expectation of success. Third, the prior art references must teach or suggest all the claim limitations.

First, the Office Action does not establish a *prima facie* case of obviousness at least because it has not identified any suggestion or motivation to modify or combine the cited reference teachings. The Office Action merely suggests that the present invention is an obvious modification of *Yamaji et al.* Here, the suggestion or motivation to modify *Yamaji et al.* is not provided by either *Yamaji et al.* or by knowledge generally available to one of ordinary skill in the art. Therefore, it is respectfully submitted that the statement in the Office Action is not sufficient by itself to establish *prima facie* obviousness.

Second, “[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).” See MPEP § 2143.01. The Office Action does not provide any citation to *Yamaji et al.* or to ordinary skill in the art to suggest the desirability of modifying *Yamaji et al.* The mere assertion that *Yamaji et al.* could be modified by what is ordinary skill in the art is not sufficient by itself to establish *prima facie* obviousness.

Third, as demonstrated above, *Yamaji et al.* does not teach or suggest all the features of the claimed invention. Namely, *Yamaji et al.* does not teach or suggest at least the feature of “at least one transparent protective layer formed on an outer surface of the first substrate and the second substrate,” as recited in independent claims 1 and 9.

For at least these reasons, Applicant respectfully submits that independent claims 1 and 9 are allowable over the applied art. Moreover, claims 3-8 and 11-16 are allowable at least because they recite the same combination of features as independent claims 1 and 9, as

well as the additional features they recite that further distinguish them over the applied art. Accordingly, it is respectfully requested that all rejections under 35 U.S.C. § 103(a) be withdrawn.

CONCLUSION

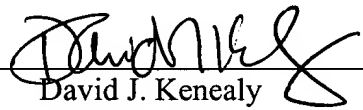
Applicant respectfully submits that all pending claims are now in condition for allowance. An early notice to this effect is earnestly solicited. Should there be any questions regarding the application, the Examiner is invited to contact the undersigned representative to expedite prosecution.

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such an extension is requested, and the fee should also be charged to our Deposit Account.

Attached hereto is a marked-up version of the changes made to the claims by the current Amendment. The attached page is captioned "**VERSIONS WITH MARKINGS TO SHOW CHANGES MADE.**"

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The following two paragraphs have been inserted:

Beginning on page 5, line 18:

-- **FIG. 3 is a drawing showing a liquid crystal display device having a plurality of layers wherein layers 18a and 18b are composed of an inorganic layer 19a and an organic layer 19b.**

FIG. 4 is a drawing showing a liquid crystal display device having a plurality of layers wherein layers 18a and 18b are composed of an inorganic layer 19a and an organic layer 19b in a different arrangement than FIG. 3. --

The paragraph beginning on page 7, line 25, has been changed as follows:

-- Each thickness of a first substrate 10a and a second substrate 10b is less than 0.7 mm, a transparent electrode 12 made of such as ITO (indium tin oxide) is formed on the first substrate. In present embodiment, although, the transparent electrode 12 is formed on the first substrate, it is possible that the transparent electrode 12 is formed on the second substrate. Further alignment layers 13a, 13b including polyamide or photo alignment material are formed on the transparent electrode 12, then an alignment direction of the alignment layer is determined by using a mechanical or optical method. On the other hand a liquid crystal layer 15 is formed between the first and second substrates. The protective layer 18a, 18b ~~can include inorganic layers 19a and organic layers 19b are an inorganic layers or an organic layers,~~ or a plurality of layers **composed of the same matter or different matter (e.g., 19b and 19a) composed of same matter or different matter** and formed on

outside surface of both the first substrate 10a and the second substrate 10b. Continually a first polarizer 14a and a second polarizer 14b are formed on the protective layers 18a, 18b.

See for example FIGS. 3 and 4. --

IN CLAIMS:

Claims 1, 3-9, and 15 have been amended as follows:

1. (Amended) A ~~{thin}~~ glass substrate of a liquid crystal display device, comprising:
~~{a glass}~~ **a first substrate and a second substrate**; and
at least one transparent protective layer formed on ~~{the glass}~~ **an outer surface of the first substrate and the second substrate**.

3. (Amended) The ~~{thin}~~ glass substrate according to claim 1, wherein the protective layer is an inorganic layer.

4. (Amended) The ~~{thin}~~ glass substrate according to claim 3, wherein the inorganic layer ~~[have]~~ **has** a compressive stress.

5. (Amended) The ~~{thin}~~ glass substrate according to claim 1, wherein the protective layer is an organic layer.

6. (Amended) The ~~{thin}~~ glass substrate according to claim 5, wherein the organic layer includes a thermosetting resin.

7. (Amended) The ~~{thin}~~ glass substrate according to claim 6, wherein the viscosity coefficient of the thermosetting resin is ~~[several cp-several ten cp]~~ **between approximately seven cp and approximately seventy cp.**

8. (Amended) The ~~{thin}~~ glass substrate according to claim 1, wherein the protective layer includes one inorganic layer and one organic layer.

9. (Amended) A liquid crystal display device, comprising:
a first substrate and a second substrate;
at least one transparent protective layer formed on **an** outer surface of the first substrate and the second substrate;
a transparent electrode formed on **an** inner surface of the first substrate or the second substrate;
an alignment layer formed on the transparent electrode; and
a liquid crystal layer between the first substrate and the second substrate.

15. (Amended) The liquid crystal display device according to claim 14, wherein a viscosity coefficient of the thermosetting resin is **between approximately** several cp~~[-]~~ **and approximately** several ten cp.